Introduction

Thank you for purchasing a Christmann RECS®|Box System.

Overview

This chapter will give you an overview about the RECS®|Box system, its functionality and basic usage.

Device types

The RECS®|Box system provides various types of devices, described below in more details:

- RECS®|Box Compute Unit (RCU)
    - long version with up to 18 baseboards, external power supply (RPU) needed. Codename: Arneb
    - short version with up to 6 baseboards, 2 integrated PSUs. Codename: Antares
- RECS®|Box Power Unit (RPU)
    - 10 integrated power supply units (PSU). Codename: Alasco

Compute Unit

The Compute Units contain the computing elements of RECS®|Box systems. There are actually two different rack chassis available:

Arneb

The Arneb is the scale-out RECS®|Box Compute Unit, hosting up to 18 baseboards (= 18 COM Express modules or 72 Apalis modules) on 1 RU. It has a side-cooling approach, where cool air flows from the left side to the right side over all installed modules and gets blown out of the chassis at the right side. To make the Arneb best scalable, it is powered by the external Power Supply Unit (PSU) Alasco.

Antares

The Antares is a standard 1 RU rack chassis with standard air flow (front to rear) and integrated PSUs. It can host up to 6 baseboards (= 6 COM Express modules or 24 Apalis

Power Supply Alasco

The PSU Alasco can be used to power several Arneb Compute Units. It converts 230V AC to 12V DC and can provide up to 3 kW total power. Its integrated management controller allows a configurable

redundancy of the 10 internal power supply units, per default it's running in a N+1 redundancy mode. The amount of running power supply units are dynamically managed depending on the number of running compute modules in the connected Arneb's.

CPU Modules

COM Express Modules (x86)

The following **Intel** CPU based compute modules are available:

CPU Type	RAM	Onboard Network
Core i7 4th generation 4 x 2.4 / 3.4 GHz, 47 Watt TDP	max. 16 GB DDR3L 1600MT/s	1 GbE[1]
Core i5 4th generation 2 x 2.9 Ghz, 37 Watt TDP	max. 16 GB DDR3L 1600MT/s	1 GbE[1]
Core i3 4th generation 2 x 2.4 Ghz, 37 Watt TDP	max. 16 GB DDR3L 1600MT/s	1 GbE[1]
Celeron 2 x 2.2 Ghz, 37 Watt TDP	max. 16 GB DDR3L 1600MT/s	1 GbE[1]
Atom 4 x 1.91 Ghz, 10 Watt TDP	max. 8 GB DDR3L 1333 MT/s	1 GbE[1]

The following **AMD** CPU based compute modules are available:

CPU Type	RAM	Onboard Network
Embedded R max. 2.3 Ghz, 35 Watt TDP	max. 16 GB DDR3 1600 MT/s	1 GbE[1]
Embedded G max. 4 x 2.4 Ghz, 25 Watt TDP	max. 8 GB DDR3L 1600 MT/s onboard	1 GbE[1]

[1] Additionally a 1 GbE or 10 GbE compute network is available on the baseboard as described in netboard installation

Apalis Modules (ARM)

The following Modules built according to the **Apalis-standard** are available:

Manufacturer	CPU Type	CPU Name	GPU	RAM	Onboard Network
Toradex	ARM Cortex-A9	Nvidia Tegra 3 4 x 1.3 Ghz, 6 Watt TDP	520 MHz	max. 2 GB DDR3 1600 MT/s	1 GbE
Christmann	ARM Cortex-A15	Samsung Exynos 5250 2 x 1.7 Ghz, 20 Watt TDP	ARM Mali-T604MP4; 533 MHz	4 GB DDR3	2 x 1 GbE

Safety Instructions

	CAUTION: For your safety
⚠️	Please carefully read through the safety notes in the section below before commissioning your server!

Installation

- The power supplies in your server system may produce high voltages and energy hazards, which can cause bodily harm. Please do not open the server covers and access the inside of the server unless you have been told to do so. Do not open the cover of the power supplies at any time!
- Place the device on a hard, level surface or mount it within a server rack.
- You cannot place the server in an area with a weak floor.Under the weight of the server,the floor might give way.
- The device is designed to operate indoor only.
- A temperature difference of 15 degrees between the room temperature and server is enough for moisture to form. Please acclimatize the unit to avoid a short-circuit at least two hours.
- Protect the device of moisture, dust, oily or any other kind of liquids and steam.
- Keep the device away from radiators and other heat sources like direct sun ray.
- Keep the device away from devices that may cause electromagnetic interferences.Doing so may damage the server as well as cause fire or an electric shock.
- Leave at least 10 cm of clearance on all vented sides of the case to permit proper ventilation.
- Control it the placement of each component in the rack,before you start to install the rails.
- First you should to install the heaviest server components on the bottom of the rack,then you can work up.
- It is recommended to use a regulating uninterruptible power supply (UPS), this way you will protect the server from voltage spikes, power surges and to keep your system operating in case of a power failure.

Operation

- Position any cables carefully, route cables so that they cannot be stepped on or tripped over. Be sure that nothing rests on any cables.
- Never operate the device in a wet environment, keep the device and any cables dry.
- Do not immerse the device or any cable into water or other liquids.
- Do not cover any vent holes, do not stick anything into the vent holes.
- To help prevent electric shock, plug the equipment and peripheral power cables into properly grounded electrical outlets.
- Do not touch any hot power supply modules or other hot components of the server.
- Always keep all panels, components of the servers and the rack's front door closed when not ensuring proper cooling.

Rack Precautions

- Deploy the anti-tilt bar or legs on the equipment rack before beginning an installation.
- Ensure that the leveling jacks on the bottom of the rack are fully extended to the floor with the full weight of the rack resting on them.
- The stabilizers should be attached to the rack before you start with the installation. If you install multiple racks, first of all you should couple together the racks.
- Before you work on any components of a rack, always make sure that the rack is stable.
- You should not extend more then one components at the same time, because the rack may become unstable.
- Mechanical loading: Mounting of the equipment in the rack should be such that a hazardous condition is not created due to uneven mechanical loading.
- Reduced airflow: Installation of the equipment in a rack should be such that the amount of airflow required for safe operation of the equipment is not compromised.

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